NOTES.

Dr. N. Busch, of Dorpat, has undertaken, at the request of the University of Dorpat and the Russian Geographical Society of St. Petersburg, a botanical investigation of the Caucasus. He proposes to visit the hitherto unexplored sources of the rivers Teberda and Maruch in Northern Caucasus.

The Goldsmiths' Company has contributed a second donation of £1000 to the special funds of the research department of the Imperial Institute, to be applied to the extension of the laboratories and to their better equipment. The Salters' Company has established a Research Fellowship of the value of £150 per annum, in connection with the scientific department, tenable by chemists thoroughly qualified to undertake the investigation of new or little-known natural products received by the Institute from the colonies and India.

A Royal Commission has been appointed "to inquire and report what administrative procedures are available and would be desirable for controlling the danger to man through the use as food of the meat and milk of tuberculous animals, and what are the considerations which should govern the action of the responsible authorities in condemning for the purposes of food supplies animals, carcasses, or meat exhibiting any stage of tuberculosis." The Commissioners are Sir Herbert Maxwell, Dr. Richard Thorne Thorne, C.B. (medical officer of the Local Government Board), Mr. George Thomas Brown, C.B., Mr. Harcourt Everard Clare, Mr. Shirley Forster Murphy (member of the Royal College of Surgeons), Mr. John Speir, and Mr. Thomas Cooke Trench.

The death is announced of Prof. E. Curtius, the distinguished Professor of Archæology in the Berlin University.

Prof. August Kekulé v. Stradonitz, Professor of Chemistry in the University of Bonn, died on Monday, at the age of sixty-six.

The Vienna Academy of Sciences announces as the subject of the Baron von Baumgartner prize of 1000 florins, "Extension of the Knowledge of the extreme Ultra-violet Rays." The prize will be awarded in 1899.

From a special number of their *Atti*, we learn that the Reale Accademia dei Lincei (of Rome) has made the following awards: Of two prizes given by the King of Italy, one for chemistry and the other for philosophical science, the first has been divided equally between Prof. Luigi Balbiano, of the University of Rome, for his monograph on certain compounds of the pyridine series, and Prof. Raffaele Nasini, of the University of Padua, for a series of twenty-seven papers on chemical physics. The prize for philosophy has not been awarded. Two prizes of 1500 lire, given by the Minister of Public Education, have been awarded—one for mathematics, the other for philology. For the mathematical prize eight candidates have submitted essays, and the prize has been adjudged to Prof. Geminiano Pirondini, of Parma, in consideration of eleven printed and written papers on geometry. The philological prize has been divided between Profs. Filippo Sensi, Silvio Pieri, G. B. Camozzi, Antonio Fiammazzo, and Oreste Antognoni. Of a further prize, given by Signor Enrico Santoro (an Italian residing in Constantinople), for mechanical inventions relating to weaving or spinning, the award has been postponed for a couple of years. These awards were announced at the twenty-first anniversary commemoration of the revival of the Academy on June 7, in presence of the King and Queen of Italy.

The prize awards of the French Société d'Encouragement, for 1896, were announced at the recent annual general meeting. The Prix Giffard, for distinguished services to French industry, is of the value of 6000 francs ; but this year, on account of exceptional merit, it has been increased to 10,000 francs and divided equally between D. Legat, for his mechanical works, and the family of the late A. Martin, renowned for his optical researches. The Grand Gold Medal, awarded each year to the author whose works have exercised the greatest influence on the progress of French industry in the preceding six years, was this year in the gift of the Comité des Arts mécaniques, who have voted it to F. G. Kreutzberger, the inventor of numerous improvements in machinery. M. Effront has been awarded the Prix Parmentier of 1000 francs for his works on alcoholic fermentations. The prize of 1000 francs for an oil motor has been gained by the Priestman motor. M. Lefèvre has obtained the prize of 2000 francs for a publication useful to chemical industry, by his remarkable "Traité des matières colorantes," reviewed in these columns on April 30 (vol. liii. p. 603). The Prix Melsens, for the author of an application of physics or chemistry to electricity, ballistics, or hygiene, has been awarded to Dr. Castaing for his works on ventilation. The prize of 2000 francs for an incandescent lamp of one-candle power, 100 volts, 1/20 ampere, has not been awarded, but an *encouragement* of 1000 francs has been given to MM. Javaux and Nysten, and a similar sum to M. Solignac. The prize of 2000 francs, for the best investigation on the comparative physical and chemical constitution of agricultural land in France, has also not been awarded, but 1500 francs have been granted to MM. Beuret and Brunet, and 500 francs to M. Waldmann. Grants of 1000 francs have been made to Prof. Zipcy and M. Jaffler as *encouragements* in connection with the prize of 2000 francs for pisciculture.

The great sea-wave which accompanied the recent earthquake in Japan appears to have been even more destructive to life and property on the north-east coast than was at first reported. A dispatch received by the Japanese Legation, from Tōkyō, says:—"The loss of life and property caused by the tidal wave, which visited the north-east coast of Japan on June 15, is as follows, according to the official returns received up to the 22nd of that month. In the Prefecture of Aomori 346 lives lost, 840 houses washed away ; in the Prefecture of Iwate, 23,309 lives lost, 5920 houses washed away ; in the Prefecture of Miyagi, 3344 lives lost, 715 houses washed away. Besides the above, the number of persons injured is as follows : 213, 23,840, 1184 in the above Prefectures respectively."

Dr. Brown Goode makes the following comparison in a Report of the U.S. National Museum, lately issued :—"There is not a department of the British Government to which a citizen has a right to apply for information upon a scientific question. This seems hard to believe, for I cannot think of any scientific subject regarding which a letter, if addressed to the scientific bureaus in Washington, would not receive a full and practical reply. It is estimated that not less than 20,000 such letters are received each year. The Smithsonian Institution and National Museum alone receive about 6000, and the proportion of these from the new States and Territories, which have not yet developed institutions of learning of their own, is the largest. An intelligent question from a farmer of the frontier receives as much attention as a communication from a Royal Academy of Sciences, and often takes more time for the preparation of the reply." It is little to the credit of British Governments that Dr. Goode's comparison should be so much to our disadvantage.

According to the last report of the British Consul at the Piræus, a Pasteur Institute has been in existence in Athens for more than a year. During this period 201 cases have been treated, with only one death ; in that case the patient had delayed submitting himself to treatment for fifteen days after the infliction of the bite. The Institute was founded by Dr. Pampoukis, who studied for a time under M. Pasteur in Paris. He established the Institute at his own expense, but after a time the municipality and the Government granted him a small annual subvention. The Consul goes on to say: "It is practically impossible to over-estimate the value of such an establishment in the Levant, which is overrun with ownerless dogs. A muzzling order does exist in Attica, but it is not enforced, and the distribution of poisoned meat in the streets of Athens and the Piræus is apparently the only attempt made by the authorities to deal with an increasing amount of rabies."

In view of the numerous applications of aluminium in the manufacture of water-bottles for military use, cooking utensils, and other articles where there is a necessity for lightness combined with resistance to corrosion, several researches on the behaviour of this metal towards liquids have been recently carried out. Mr. J. W. Richards, who has just published the latest contribution to this subject in the *Journal of the Franklin Institute*, has studied more especially how far the power of resisting the attack of corrosive liquids can be increased by alloying with small quantities of other metals. The general result of the experiments is to show that pure aluminium resists the action of alkaline solutions better than any of the alloys examined. This also holds true for solutions of nitric acid and of common salt; but an alloy containing 2 per cent. of titanium appears to be the best for liquids containing free hydrochloric acid. All the alloys tried offer great resistance to the action of acetic and carbonic acids.

Mr. Henry Deane referred to the late Sir William Macleay's bequest for the endowment of a lectureship in bacteriology, in his presidential address to the Linnean Society of New South Wales, a copy of which has just reached us. It may be remembered that the Senate of the Sydney University decided to relinquish the bequest, and to return the money to the executors. This was done about a year ago, and the sum, amounting to £12,704, was afterwards paid into the Linnean Society of New South Wales. By the terms of the bequest, it has devolved upon the Council of the Society to invest the money, and use the interest to pay a competent bacteriologist, and maintain a suitable laboratory with appliances for bacteriological research. The result is that the Council has decided to appoint a bacteriologist at the close of the hot season 1896–97, provided that one can be engaged on what are practically the terms and emoluments offered to University demonstrators. A number of other subjects were passed in review by Mr. Deane in his address. His remarks upon forestry will perhaps do something towards checking the depletion of the forests of New South Wales.

An important point dealt with by Mr. Deane in the address referred to in the foregoing note, is the origin of the vegetation of Australia. Prof. Ettingshausen's observations and conclusions are adversely criticised; and it is stated that at present the known facts seem to afford grounds for concluding: (1) That many, if not all, the typical Australian floral types originated in Australia or in some land connected with it, but now submerged. (2) That the assumption of the existence of a universal flora of mixed types at any epoch is unfounded. (3) That the fossil plant-remains of Tertiary age in Eastern Australia indicate a vegetation in all respects similar to that existing on the coast in the same latitude at the present day. To these Mr. Deane thinks may be added a fourth conclusion of less certain character, but of high probability, that the *Proteaceæ* represent a most ancient type which had their origin at a time when not only extensive areas of land existed in the southern hemisphere, but when some kind of connection, more or less lasting, existed between Australia and South Africa. Mr. Deane concluded his address with an account of the work of the Horn expedition to Central Australia.

Much attention has been paid in recent years to the prediction of the minimum night temperature, on account of its importance to agriculture, especially in spring-time, when late frosts are detrimental to delicate plants, and various important papers have been written upon the subject, *e.g.* by M. Kammermann, of the Geneva Observatory, and M. Lemström, of Helsingfors. Reference to the matter may also be found in some text-books of meteorology, where it is pointed out that if the dew-point is determined in the evening, it will rarely be found that the air temperature will fall much below that point during the night. In the current number of *Ciel et Terre*, M. Lancaster draws attention to the fact, which, if known, is not generally acknowledged, that as long ago as 1824 this relation between the night minimum and the temperature of the dew-point was indicated by Dr. A. Anderson, in a note entitled "On the influence of the hygrometric state of the atmosphere upon the minimum temperature of the night," printed in vol. xi. pp. 161–9 of the *Edinburgh Philosophical Journal*. The same author also refers incidentally to the subject in a short note "On the Dew-point," presented to the British Association in 1840. As M. Lancaster says, this is one of many instances presented by the history of science, of problems being studied, which have been long since solved.

The Council of the Scottish Meteorological Society presented their report at the annual general meeting held yesterday. From the report we learn that a large work, which has been in course of preparation for some time, has just been completed, viz. averages of mean temperature and mean barometric pressure for the forty years ending with December 1895 have been calculated for each of the Society's 145 stations. It is not possible to over-estimate the importance of these averages in carrying on several of the more important departments of the Society's work, more particularly in the preparation of the monthly and quarterly report of Scottish weather. The very heavy work of recopying, on daily sheets, the hourly observations of the two Ben Nevis Observatories has now been virtually completed down to date. This result has been mainly secured by the aid of the grant of £100 obtained from the Government Research Fund last year. The large inquiry carried on by Dr. Buchan and Mr. Omond for some years on the influence of fog, cloud, and clear weather respectively, on the diurnal fluctuations of the barometer, has been extended into other regions, particularly the Arctic regions and Portugal, which furnish data of the utmost importance to the inquiry. Among the questions more immediately raised, as the investigation proceeds, is the influence on the pressure at the two observatories of the vertical distribution of temperature and humidity through the intervening stratum of air between the top and bottom of the mountain. The Council referred to the handsome donation of £1875 made to the Ben Nevis Observatories by the Trustees of the late Earl of Moray; they have by means of it been enabled to engage an additional clerk for the office, so that, for the next two or three years, Dr. Buchan's time may be largely set apart for the discussion of the Ben Nevis observations. It has further been resolved to establish a temporary station during the summer and autumn on the top of Meal ant' Suie, situated at a height of 2322 feet, and in the line of the two observatories. The object sought to be attained by this new station is a better knowledge of the vertical distribution, particularly during anticyclonic periods, of temperature and humidity through the aërial stratum between Fort-William and the top of Ben Nevis.

The meteorological department of the library of Harvard College Observatory has become, by recent large accessions, one of the most complete collections of meteorological works in the United States. In the early history of the Observatory, many such works were collected by the first and second directors of the institution, Profs. W. C. Bond and G. P. Bond; and since then the collection has continued steadily to increase. More recently, states the Harvard College Observatory *Circular*, No. 8, three large additions have been made to it: the general library of Harvard University has placed at the Observatory a great number of the meteorological works formerly kept at Gore Hall; the Blue Hill Meteorological Observatory has made a similar transfer; and the New England Meteorological Society, which has lately dissolved its organisation, has deposited the works contained in its library, and also the remaining copies of its own publications. Special efforts are now in progress to render still more complete the large collection which has resulted from these additions. It is hoped that the meteorological department of the library may be made so complete as greatly to increase its present value in aiding the studies of meteorologists.

In spite of its limited resources, the British School at Athens contrives to initiate and carry out very valuable archæological work. The report read at the annual meeting of the supporters of the school, held on Monday, gave an encouraging account of the work of exploration and excavation accomplished during the past year. The financial position of the school, though still below that of its rivals, is now upon a footing which is comparatively satisfactory. The subscriptions, together with the Government grant of £500 per annum for five years, lead the Committee to believe that they may reckon upon an annual income of £1400 for some years to come. Of this it is estimated that about £1000 will be required for the current expenses of the school (including studentships), leaving about £400 per annum for excavations. But though the school stands in a better financial position than it has ever been before, its revenue is still modest as compared, for example, with the £3100 a year of the French school, which has, in addition, received a special grant of £30,000; the £2400 of the Germans, to whom also the Government has made the contribution of £40,000 for the excavations at Olympia; and the United States school, which enjoys £2000 a year. The school is, however, doing its best on its modest resources, and the archæological discoveries made in connection with it are valuable contributions to human knowledge.

Prof. H. A. Newton has been making a comparison between the mortalities of Yale graduates in the years 1701–1744 and 1745–1762, to see whether the changes of mode of living and comforts had any effect upon the vital statistics of the two groups of men (Yale, *Biographies and Annals*). By arranging the mortalities in decades of years from 15 to 75 years of age in the case of each group, it was seen that the group 1745–1762 showed a distinct increase of mortality per thousand lives between the ages of 15 and 35; an equality of mortality during the next ten years, and a decided diminution for the ages 46 to 75, when compared with corresponding periods in the group 1701–1744. It is a marked feature of the mortality statistics of American college graduates that there is excessive mortality in the years immediately following graduation. This, Prof. Newton thinks, is no doubt due to the strenuous efforts of young graduates to attain a good position in their profession. The later favourable experience in the ages from 45 to 75 is presumably due to the fact that they have by that time gained position, or else lost ambition. It would seem that this early strain was experienced by the graduates of the years 1701–1744 distinctly less than it was by the graduates of the eighteen years following. It would also seem that the corresponding strain for men between the ages 45 and 75 was much greater than for the later graduates, and perhaps that there had been a decided gain in the modes and comforts of life during the quarter of a century, which on an average separates the two groups of men.

The literature of water-bacteriology is fast assuming well-nigh unwieldy proportions; almost the latest contribution to hand is an elaborate memoir in Spanish, from the Municipal Chemical Laboratory of Valparaiso, on an epidemic of typhoid fever in this city. Dr. Mourgues, who is responsible for the report in question, claims to have successfully tracked this serious outbreak to the water supplying the city. The chemical analyses already showed it to be badly polluted with sewage; and in this condition, without undergoing filtration, it was distributed for dietetic purposes. By resorting to all the most efficient methods at present at our disposal for the discovery of the typhoid bacillus in water, Dr. Mourgues tells us that he "discovered a bacillus which, according to the majority of the bacteriologists, is the cause of typhoid fever." He exhibits, however, some degree of caution in accepting his own conclusions, for he tells us that if it was not the typhoid bacillus, it was the *B. coli communis*, which, according to Rodet, G. Roux, and Vallet, is also capable of inducing typhoid fever. Dr. Mourgues has produced an able and interesting report quite apart from the credit attaching to his investigations; for he has brought together, in a brief and handy form, most of the principal work which has been done in recent years on the bacteriology of water in relation to the typhoid bacillus.

In a letter communicated to the *Comptes rendus* (June 22), M. Moureaux gives a short account of some recent measurements of the magnetic elements which he has made in South Russia. In the neighbourhood of a village called Kotchetovka, at latitude 51° and longitude 6° 8′ east of Poulkowa, the extreme values of the elements determined in fifteen different stations, scattered over an area of about a square kilometre, were as follows:—

Declination	+58°	to	−43°
Dip	79°	to	48°
Horizontal force	0·166	to	0·589

In addition to the extreme largeness of these differences, it is interesting to note that the horizontal force attains in this region a greater value than that found at the equator. Since the dip is not less than 48°, it follows that the value of the total force in some parts of this region is extremely large. At another village (Potrovshojé), about fifteen kilometres to the south of the first, the values of the elements were:—Declination, +52° 56′; dip, 81° 45′; horizontal force, 0·09. A series of measurements showed that the dip attained a maximum value of 82° 13′ near this point, the value of the horizontal force corresponding to this maximum being 0·079.

The Metopic Suture is the name given by anthropologists to the persistence of the frontal suture. Several investigators have attacked the problem of the significance of this suture, but the most thorough study is that by Dr. G. Papillault in the current number (tome ii. 3 sér. 1 fasc.) of the *Mémoires de la Soc. d'Anth. de Paris*. After a very detailed investigation, the author comes to the following general conclusions:—It has no sexual significance. The brain is the primary cause of metopism; not that metopics have an intellectual superiority over other people, but a superiority in the relative weight of their brain. There is a preponderance of complicated sutures and wormian bones in metopic crania, but these are less marked in the races in which the weight of the skull increases equally with that of the skeleton; in other words, in what one generally terms the lower races. Civilisation, in multiplying and knitting the bonds of social union, in augmenting in the struggle for life the power of the intelligence and in diminishing the preponderance of brute force, permits those who are intellectually endowed to live and prosper despite their muscular weakness, and thus it also becomes one of the most important factors of metopism.

THE publication of a special journal to care for the specific interests of physical chemistry, will commence in October of this year. This *Journal of Physical Chemistry* is to be issued upon the first of every month, except that in July, August, and September no number will appear. It will contain articles embodying original research in all branches of experimental and theoretical physical chemistry; and this matter will be supplemented by reviews of the current literature of the subject. All communications concerning articles should be addressed to the *Journal of Physical Chemistry*, Ithaca, N.Y. The editors are Wilder D. Bancroft and Joseph E. Trevor, assistant professors of physical chemistry in Cornell University.

IN a recent number of the *Comptes rendus* (June 22), MM. Lortet and Genoud give an interesting account of their experiments on the effect of Röntgen rays on tuberculosis. Although still incomplete, these experiments seem to indicate that we may have in the new light a remedy for tuberculosis. Eight guinea-pigs were inoculated with the virus of tuberculosis. Three of these were exposed daily for at least an hour to the influence of powerful Röntgen radiations, from April 25 to June 18. The other five were not so treated. In the latter, abscesses were produced and the health deranged. In the three treated with Röntgen rays no abscesses were formed, the health remained good, and the animals increased in weight.

THOUGH examinations of the contents of stomachs of crows have shown that these birds feed very largely upon noxious insects and other injurious animals, the result apparently does not prove that the crow is a friend to the farmer. A note in the *North British Agriculturist* reports that much damage has been committed in turnip fields in Annandale during the past few days by crows. The crows, in their search for wire-worms, pull up the young turnips, probably finding a worm at the root of one out of 150 or 200 pulled up. The fact shows the importance of avoiding conclusions as to the usefulness of a bird merely from determination of food habits. The farmers of Annandale would probably have been better pleased if the crows had fed upon the young turnips instead of wire-worms, for the destruction would not then have been so great.

THE third part of Mr. John W. Taylor's valuable "Monograph of the Land and Freshwater Mollusca of the British Isles" has just been published by Messrs. Taylor Brothers, Leeds. It deals with the morphology and anatomy of the animal inhabitants of shells, and is illustrated just as clearly and liberally as the previous parts, in which the shells and their auxiliary appendages were described. Conchologists should be grateful to Mr. Taylor for the pains he is taking to provide them with a trustworthy and instructive work upon British Land and Freshwater Molluscs.

MESSRS. TRUSLOVE AND HANSON have in the press an illustrated work on "The Natives of Sarawak and British North Borneo," by Mr. Ling Roth. The work will be published in two volumes, and the edition will be limited to seven hundred copies. No complete work dealing with the natives of British Borneo exists, though the history of that very interesting colonial possession could furnish material for a dozen romances. How very completely Sir James Brooke, and his nephew and successor as Rajah (Sir Charles Brooke), have changed the customs of the Dyaks, should be known to all who are interested in methods of establishing British colonies, and of improving the condition of the people who inhabit them. Mr. Ling Roth's work will deal with the people of British Borneo from many points of view, and it promises to be a valuable contribution to anthropology.

THE South London Entomological and Natural History Society has sent us the abstract of the *Proceedings* for 1895, together with the address of the President, Mr. T. W. Hall. Though unpretentious in character, the Society has assisted in the diffusion of biological knowledge by its meetings and collections, and its publications always contain material of interest to every one interested in natural history. Another Society, which has just sent us its Report for 1895, is the Manchester Microscopical Society. First among the contents of this publication is an address by the President, Prof. F. E. Weiss, on "The Influence of External Conditions on Reproductive Processes in Plants." The subjects of other papers are: some insect pests, by Mr. A. T. Gillanders; the organs and function of reproduction in insects, by Mr. F. Paulden; notes on Hydrozoa and Polyzoa, by Mr. J. Smith; photo-micrography, by Mr. E. H. Turner; and the animal life of the Coal-measures, by Mr. Herbert Bolton. May such Societies as these of South London and Manchester long exist to stimulate and encourage biological and microscopical research.

WE have on our table several new editions of scientific books. First among these is the seventh edition of Dr. Benjamin Williamson's "Elementary Treatise on the Integral Calculus" (Longmans, Green, and Co.). The chapter on the calculus of variations has been considerably enlarged, and a brief discussion added on the application of that calculus to double and multiple integrals. A short chapter on the sign of substitution has also been introduced. Messrs. A. and C. Black have published the second edition of "Rheumatism: its Nature, its Pathology, and its successful Treatment," by Dr. T. J. Maclagan. Twenty years ago the author introduced salicin to the medical profession as a remedy in acute rheumatism. In the first edition of this work, published in 1881, he expounded the miasmatic theory of rheumatism, and offered an explanation of the manner in which the salicyl compounds produce anti-rheumatic effects. In the present edition the whole subject of the pathogenesis of rheumatism, and the curative action of the salicyl compounds, is gone over again. The book thus contains the history of a remarkable and beneficial change in the treatment of a disease which was the despair of a past generation of physicians. A fifth edition of a "Coloured Vade-mecum to the Alpine Flora, for the use of Tourists in Switzerland," has been published by Albert Raustein, Zürich. The book contains 170 coloured illustrations of Alpine flowers, accompanied by descriptive text in English, French, and German, by L. Schröter and Prof. C. Schröter. The book should be in the hands of every lover of Alpine flowers; and it will be found a pleasant companion to the many tourists who, during the next few months, will wander about the Alps. The pleasing and elegant "Ros Rosarum, ex Horto Poetarum," by E. V. B., the second edition of which has been published by Mr. Elliot Stock, contains a wealth of poetic extracts having the rose for their theme. The quotations show that the rose has been honoured and admired in almost all times and places. The twenty-eighth edition of "Skertchly's Physical Geography," revised by Mr. J. H. Howell, has been published by Mr. Thomas Murby. Mr. Howell has made a number of requisite alterations in the text, but the book is still badly illustrated.

THE annual Report (1894-95) of the Director of the Field Columbian Museum, Chicago, has been received. A large number of accessions to the collections have resulted from the expeditions sent out by the Museum. In October 1894, Mr. Allison V. Armour, of Chicago, invited Dr. Millspaugh, of the Department of Botany, and Prof. Holmes, of the Department of Anthropology, to accompany him on his yacht to Havana, Progreso, the islands on the east coast of Yucatan, Laguna di Terminos and Vera Cruz. On this expedition, Dr. Millspaugh's work resulted in the acquisition of nearly eight hundred specimens in botany, which formed the types included in his "Flora of Yucatan," and considerable material for exchange to augment the small herbarium in his department. He also secured about four hundred specimens in zoology, principally conchology, and a number of excellent negatives relating to geology, botany, ethnology and travel. Prof. Holmes secured altogether about one thousand specimens in archæology from Yucatan, Chiapas, Oaxaca, Vera Cruz and the valley of Mexico, and made a number of important observations. An expedition to San Domingo, conducted by Mr. Geo. K. Cherrie, Assistant Curator in the Department of Ornithology, resulted in the collection of 1958 bird skins, 16 mammals, 80 reptiles; and a number of specimens of fish and Crustacea. Among the birds, two species proved new to science, and a number of others are very interesting as representing rare and little-known forms. Captain Miner W. Bruce was fitted out by the Museum for an expedition to Alaska and Siberia in June 1894, and he acquired valuable ethnological material from North Alaska. A number of minor expeditions were also organised in the interests of the Museum, and they have resulted in numerous additions to the collections in different departments, as well as the acquisition of information of great scientific value, which information is made known through the admirable series of publications issued by the Museum.

The additions to the Zoological Society's Gardens during the past week include a Lesser White-nosed Monkey (*Cercopithecus petaurista*) from West Africa, a White-throated Monitor (*Varanus albogularis*) from South Africa, presented by Sir Gilbert Carter; a Vervet Monkey (*Cercopithecus lalandii*) from South Africa, presented by Mr. Henry Russell; a Diana Monkey (*Cercopithecus diana*) from West Africa, presented by Mr. E. Kirby; a Striped Hyæna (*Hyæna striata*) from Arabia, presented by Mr. C. A. Osborne; a Hamster (*Cricetus frumentarius*), European, presented by Miss Hilton; three Yellow-bellied Liothrix (*Liothrix luteus*) from India, presented by Mr. Robert E. Graves; an Iceland Falcon (*Hierofalco islandus*) from Iceland, eight Horsfield's Tortoises (*Homopus horsfieldi*) from Central Asia, two Giant Toads (*Bufo marinus*) from Brazil, a Reticulated Python (*Python recticulata*) from Malacca, deposited; two Lettered Aracari (*Pteroglossus inscriptus*) from Para, a Black-necked Swan (*Cygnus nigricollis*) from Antarctic America, purchased; a Burrhel Wild Sheep (*Ovis burrhel*), two Glossy Ibisis (*Plegadis falcinellus*), bred in the Gardens.

OUR ASTRONOMICAL COLUMN.

The Cluster in Coma Berenices.—The results of a triangulation of the more conspicuous stars in this group have been recently issued from the astronomical observatory of Yale College. This contribution to a class of observations that is now receiving much attention, has been made with the heliometer by Mr. F. L. Chase at the suggestion of Dr. Elkin. The instrument employed is the same that Dr. Elkin used in his measurements of the Pleiades group, and the method of reduction follows generally the same lines that were then adopted; but the different configuration of the fundamental stars on which the measures are based, has enabled the observer to dispense in some degree with measures of position angle, the less trustworthy coordinate in heliometer observations, and to rely upon measures of distance from six selected stars, five of which form nearly an equilateral pentagon, the sixth being approximately in the centre. Two lines of stars roughly crossing the pentagon at right angles, and extending some six degrees, have been utilised for determining the scale value. The final result is to give the coordinates of thirty-three stars (Equinox 1892·0) limited to about the 8·5 mag., below which magnitude the most satisfactory observations cannot be made with the Yale instrument. An examination of the probable errors of the measures, classified according to the magnitude of the stars, does not disclose any law dependent on brightness, so that Mr. Chase has not overstepped prudence in this respect. At the same time the position of so many well-scattered points of reference has been determined, that it should be an easy task, and one worthy of accomplishment, to derive the places of the remaining and fainter stars of the group by means of photography.

Objective Gratings.—Messrs. Hall and Wadsworth describe in the June number of the *Astrophysical Journal* the results of a fairly successful application of an objective grating, constructed on the original Fraunhofer method, and attached to a 12-inch photographic object-glass, whose ratio of aperture to its focal length is as 1:18. Two screws 27 cm. long, and with 63 threads to the centimetre, were cut in two along their axes, and the half-screws mounted, parallel to each other, on the opposite sides of rectangular frames. Copper wire was wound across in the successive threads, and soldered to the screws so as to produce a grating. When applied to the telescope, photographic spectra of both the first and second order could be obtained, and cases are quoted showing the agreement of the deduced wave-length with Rowland's values. One of the difficulties experienced in the use of this form of grating arises from the wind disturbing the lines of the grating, an annoyance which, it is suggested, might be prevented by soldering light rods across the wires parallel to the half-screws. The time required for exposure with objective gratings is of course longer than with the objective prism; but against these two disadvantages is to be set the comparative small cost of construction. In the one used in the experiments at Chicago, the cost was only one-thirtieth of that of an equally large objective prism of small angle, and evidently the advantage on the side of economy increases as the aperture increases. In the case of the Yerkes telescope, it is computed that the grating would cost about the two-hundredth part of the prism of the same size.

Distortion of the Earth's Surface.—Under the title of "An Earth-bending Experiment," Prof. H. H. Turner gives a description of a series of observations undertaken at Oxford by Prof. J. Milne (*Observatory*, July). In his investigation of terrestrial disturbances in the Isle of Wight, Prof. Milne found evidence of their being due to several causes. For instance, some are due to real local earthquakes on a small scale, some owing to faint echoes of very distant earthquakes, while it appears that others may have their origin in the various states produced on the surface of the ground by meteorological causes. These last have specially attracted attention, as it is quite possible that the considerable load represented by a shower of rain or snow, or a heavy fall of dew, may be capable of bending the surface of the ground to such a degree as to affect the stability of any astronomical instruments not having very deep foundations. In looking for these effects, it might be expected that tilts due to rainfall, though irregular, would show some evidence of an *annual* periodicity, while those produced by dew would show a *diurnal* variation. To test whether any of these causes might have an appreciable disturbing effect, the University Observatory at Oxford was chosen as being particularly suitable, standing alone in a grassy park. The instruments for detecting and recording any difference of level consisted of one of Prof. Milne's horizontal pendulums and the level of the Barclay transit circle. The effect of a sudden shower was imitated by securing the services of seventy-six people, who were marched, in various degrees of compactness, up to and away from the slate slab supporting the registering apparatus. The result of these experiments was that a small depression was observed, always towards the crowd, the maximum value, however, being only 0″·5, when the load was concentrated and close to the instrument. The load employed being estimated greater than is likely ever to be produced by rain, &c., it is concluded that on that particular site at least no disturbance due to meteorological causes need be feared.

ON THE LIQUATION OF CERTAIN ALLOYS OF GOLD.[1]

The molecular distribution of the metal in alloys of gold and of metals of the platinum group has been described by me in several papers, the most important of which has been published in the *Philosophical Transactions*. New

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[1] Abridged from a paper read before the Royal Society, May 7.